

## GUNNISON RESERVOIR



### Introduction

Gunnison Reservoir is an large reservoir at the south end of the Sanpete Valley in Central Utah. It is a shallow impoundment of the San Pitch River, upstream from Gunnison and west of Manti, between the Wasatch Plateau and the San Pitch Mountains. In dry years, such as 1992, it is drained. It is also known as Sugar Kids

### Pond.

Gunnison Reservoir was created in 1889 by the construction of an earth-fill dam. The reservoir shoreline

#### Characteristics and Morphometry

Lake elevation (meters / feet)	1,643 / 5,390
Surface area (hectares / acres)	521 / 1,287
Watershed area (hectares / acres)	174,158 / 430,343
Volume (m <sup>3</sup> / acre-feet)	
capacity	22,470,000 / 18,218
conservation pool	none
Annual inflow (m <sup>3</sup> / acre-feet)	
Retention time (years)	
Drawdown (m <sup>3</sup> / acre-feet)	
Depth (meters / feet)	
maximum	8.5 / 28
mean	4.8 / 15
Length (meters / miles)	6000 / 19,536
Width (km / miles)	1.600 / 1.03
Shoreline (km / miles)	15.6 / 9.7

#### Location

County	Sanpete
Longitude / Latitude	111 42 06 / 39 12 03
USGS Maps	Sterling, UT 1966
DeLorme's Utah Atlas & Gazetteer™	Page 37 A-6
Cataloging Unit	San Pitch (16030004)

is

entirely privately owned, with the exception of two parcels of BLM land on the west shore, and the dam area, which is state-owned. Access is unrestricted. Water is consumed for agricultural uses, but also used for recreation and warmwater aquatic habitat. Irrigation takes precedence over other uses. If the dam is enlarged to store water from the proposed Narrows Reservoir, a conservation pool may be included. Otherwise, water use and management practices are not expected to change.

## LAKE REPORTS

File Contains Data for  
PostScript Printers Only

## Recreation

Gunnison Reservoir is accessible from US-89 immediately north of Sterling via an access road opposite from and immediately south of the road to the Palisade State Park. The road follows Six mile Creek across the valley floor in a northwest direction for about 1.5 miles before crossing the river below the dam and continuing up the west side of the reservoir. The west side of the reservoir is also accessible going west out of Manti. The east side of the reservoir is probably accessible from the abandoned railroad grade for about 1.5 miles.

The lake is used for fishing, boating and waterskiing. Shallow, muddy waters limit recreational demand. There are no recreational facilities at the reservoir.

The nearest campground is Palisade State Park, located east of US-89, across from the access road to Gunnison Reservoir. It has 53 campsites, a sandy beach (on Palisade Reservoir), modern rest rooms with hot showers, a group camping area, a nine-hole golf course and a pavilion. Usage fees are charged.

There are private campgrounds in Gunnison, Sterling and Manti (see info box).

## Watershed Description

Gunnison Reservoir is an impoundment of the San Pitch River. The watershed includes the entire Sanpete Valley, from the reservoir north to the divide north of Fairview, and the east face of the San Pitch Mountains, and the west face of the Wasatch Plateau. The valley is relatively flat, being filled with alluvial deposits from the mountain, so the reservoir is consequently shallow.

The land around the reservoir is used for agricultural purposes, including rangelands and irrigated cropland.

The watershed high point, North Tent Mountain, is 3,423 m (11,230 ft) above sea level, thereby developing a complex slope of 5.6% to the reservoir. The average river gradient above the reservoir is 1.3% (67 feet per mile). The inflows are the San Pitch River and a diversion canal from Six mile Creek. The outflow is the San Pitch River, which is subsequently diverted into canals.

The watershed is composed of the deeply dissected west face of the Wasatch Plateau, the foothills and east face of the San Pitch Mountains (also known as the Gunnison Plateau), the foothills at the north end of the watershed, and the alluvial deposits forming the valley itself. Soil associations are listed in Appendix III.

The vegetation communities consist of pine-aspen, spruce-fir, pinyon-juniper, sagebrush-grass, greasewood, cropland, oak, and maple. The watershed receives 25 - 102 cm (10 - 40 inches) of precipitation annually. The frost-free season around the reservoir is 100 - 120 days per year.

According to the 1982 Clean Lakes Inventory, land use is as follows: 63% native grazing (mostly cattle and

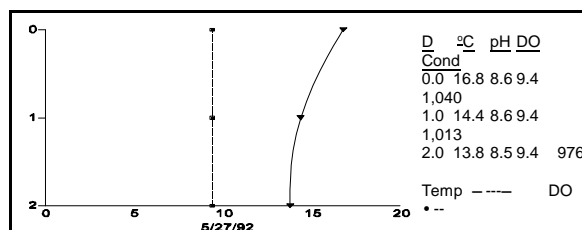
sheep), 23% multiple use, 11% pasture and hayfields, 1% urban, 1% wildlife land, and 1% non-irrigated cropland.

## Limnological Assessment

The water quality of Gunnison Reservoir is good, even though it is usually fairly turbid due to the shallow

Limnological Data			
Data sampled from STORET site: 594355			
Surface Data	1981	1990	1992
Trophic Status	H	H	H
Chlorophyll TSI	-	45.35	
Secchi Depth TSI	-	80.56	77.35
Phosphorous TSI	-	60.84	50.56
Average TSI	60.56	62.25	63.96
Chlorophyll <i>a</i> (ug/L)	-	4.5	-
Transparency (m)	-	0.24	0.3
Total Phosphorous (ug/L)	60	51	25
pH	-	8.5	8.6
Total Susp. Solids (mg/L)	71	43	28
Total Volatile Solids (mg/L)	-	-	6
Total Residual Solids (mg/L)	-	-	22
Temperature (°C / °f)	-	19/66	17/63
Conductivity (umhos/cm)	-	1840	1040
Water Column Data			
Ammonia (mg/L)	0.1	0.04	0.04
Nitrate/Nitrite (mg/L)	0.25	-	0.16
Hardness (mg/L)	655	380	398
Alkalinity (mg/L)	477	276	311
Silica (mg/L)	-	-	10.4
Total Phosphorous (ug/L)	60	69	50
Miscellaneous Data			
Limiting Nutrient	N	N	N
DO (Mg/l) at 75% depth	-	5.6	9.4
Stratification (m)	-	NO	NO
Depth at Deepest Site (m)	-	2.8	2.0

nature of the reservoir. It is considered to be very hard with a hardness concentration range from 380-398 mg/L (CaCO<sub>3</sub>) in recent years but in 1981 the hardness was reported as 655 mg/L (CaCO<sub>3</sub>). The only parameter that has exceeded State water quality standards for defined beneficial uses is phosphorus. The average concentration of total phosphorus in the water column in 1990 and 1992 was 69 and 50 ug/L which is over double the recommended pollution indicator for phosphorus of 25 ug/L. Average phosphorus concentration for the water



column in June, 1991 and the concentration near the bottom of the lake in August, 1991 did exceed the State standard. Although there was a significant increase in the concentration of total phosphorus from 1989 to 1991 additional data will be needed to evaluate this potential trend for phosphorus concentrations. Dissolved oxygen concentrations in late summer substantiate the fact that water quality impairments do exist. In 1981 the reservoir was characterized as a phosphorus limited system. The 1989-91 data suggest that the reservoir is currently a nitrogen limited system. TSI values indicate the reservoir is hypereutrophic.

The DWR stocks the reservoir, but stocking information was not available. Historically, there have been naturally reproducing populations of smallmouth bass (*Micropterus dolomieu*), bullhead (*Ictalurus sp.*), yellow perch (*Perca flavescens*), carp (*Cyprinus carpio*), green sunfish *Lepomis cyanellus*), channel catfish (*Ictalurus punctatus*), largemouth bass (*Micropterus salmoides*) and bluegill (*Lepomis macrochirus*). In some years, bass fishing has been excellent. Currently (1993) the reservoir is almost dry, and some species may have been eliminated. The reservoir has never been chemically treated in by the DWR to control rough fish competition, but a century of water flow manipulation and agricultural runoff make the presence of native fish populations unlikely. In addition DWR has reported that a population of crayfish is present in the reservoir.

Because the reservoir was dry in 1992, there was no phytoplankton to inventory.

## Pollution Assessment

Nonpoint pollution sources include the following: Sedimentation and nutrient loading from grazing. Human wastes, litter and toxins from recreation. Nutrients, cleaning chemicals and human wastes from urban areas. Sediments, pesticides and other toxins from agricultural lands.

Point pollution sources include the following:  
Moroni Wastewater Treatment Plant  
Moroni Turkey Processing Plant

## Beneficial Use Classification

The state beneficial use classifications include: boating and similar recreation (excluding swimming) (2B), warm water game fish and organisms in their food chain (3B) and agricultural uses (4).

### Information

#### Management Agencies

Six County Commissioners Association	896-9222
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146

#### Recreation

Panoramaland Travel Region (Richfield)	896-9222
Manti Chamber of Commerce	835-6271
Palisade State Park	835-7275
Lund's Campground (Gunnison)	528-3366
Manti Campground	835-7851

#### Reservoir Administrators

Gunnison Irrigation Company	528-7961
-----------------------------	----------

## LAKE REPORTS